

SAFETY DATA SHEET

Lysis Buffer D

Section 1. Identification

Product Identifier: Lysis Buffer D
Product code: 90079, 90080, 90254
Product Type: Liquid

Supplier's details: Norgen Biotek Corporation
3430 Schmon Parkway
Thorold, ON
Canada L2V 4Y6
Tel: (905) 227-8848
Fax: (905) 227-1061
Toll Free: 1-866-667-4362
E-mail: techsupport@norgenbiotek.com

Emergency telephone number (with hours of operation): CHEMTREC
U.S. & Canada: 1-800-424-9300

Section 2. Hazard Identification

Classification of the Substance or mixture: ACUTE TOXICITY (oral) - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A

GHS label elements

Hazard Pictograms:



Signal Word: Warning
Hazard Statements: H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.

Precautionary statements:

Prevention: P280 - Wear protective gloves. Wear eye or face protection.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Response: P301 + P312, P330 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P332 + P313 - If skin irritation occurs: Get medical advice or attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - If eye irritation persists: Get medical advice or attention.

Section 2. Hazard Identification

Storage: Not applicable.
Disposal: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Other means of identification: N/A

Ingredient name	% (w/w)	CAS number
Guanidinium chloride	60-80	50-01-1

Ranges id listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.
There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

- Eye Contact:** Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.
- Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact:** Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion:** Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact:** Causes serious eye irritation.
- Inhalation:** No known significant effects or critical hazards.
- Skin contact:** Causes skin irritation.
- Ingestion:** Harmful if swallowed.

Over-exposure signs/symptoms

- Eye contact:** Adverse symptoms may include the following:
Pain or irritation
Watering
Redness
- Inhalation:** No known significant effects or critical hazards.
- Skin contact:** Adverse symptoms may include the following:
Irritation
Redness
- Ingestion:** No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments: No specific treatment.

Protection of

first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable

extinguishing media: None known.

Specific hazards

arising from the

chemical:

No specific fire or explosion hazard.

Hazardous thermal

decomposition

products:

Decomposition products may include the following materials:
Carbon dioxide, Carbon monoxide, Nitrogen oxides (NO_x), Phosphorus oxides,
Halogenated compounds, metal oxide/oxides

Special protective

actions for

fire-fighters:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective

equipment for

fire-fighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency

personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency

responders:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental

precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill:

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill:

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including incompatibilities:

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls:

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental

exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance:

Physical State: Liquid
Color: Clear, colourless
Odor: Not available.
Odor threshold: Not available.
pH: 7
**Melting point/
freezing point:** Not applicable.
**Boiling point, initial
boiling point, and
boiling range:** Not available.
Flash point: Not applicable.
Evaporation rate: Not available.
Flammability: Not available.

Lower and upper explosion limit/flammability limit:	Not available.
Vapor pressure:	Not available.
Relative vapor density:	Not available.
Relative density:	Not available.
Solubility:	Miscible in water.
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not available.
Flow time (ISO 2431):	Not available.
<u>Particle characteristics</u>	
Median particle size:	Not applicable.

Section 10. Stability and reactivity

Reactivity:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability:	The product is stable.
Possibility of hazardous reactions:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid:	No specific data.
Incompatible materials:	Reactive or incompatible with the following materials; oxidizing materials, acids and alkalis.
Hazardous decomposition products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicology information

Information on toxicology effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Guanidinium chloride	LD50 Oral	Rat	475 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Guanidinium chloride	Eyes – Moderate Irritant	Rabbit	-	81400 µg	-
	Skin – Severe Irritant	Rabbit	-	24 hr 500 mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure:

Routes of entry anticipated: Oral, Dermal, Inhalation

Potential acute health effects

Eye contact: Causes serious eye irritation.

Inhalation: No known significant effects or critical hazards

Skin contact: Causes skin irritation.

Ingestion: Harmful if swallowed.

Symptoms related to the physical, chemical, and toxicological characteristics

Eye contact: Adverse symptoms may include the following:
Pain or Irritation
Watering
Redness

Inhalation: No known significant effects or critical hazards.

Skin contact: Adverse symptoms may include the following:
Irritation
Redness

Ingestion: No known significant effects or critical hazards.

Delayed and immediate effects and chronic effects from short- and long-term exposure

Short term exposure

Potential immediate effects: No known significant effects or critical hazards.

Potential delayed effects: No known significant effects or critical hazards.

Long term exposure

Potential immediate effects: No known significant effects or critical hazards.

Potential delayed effects: No known significant effects or critical hazards.

Potential chronic health effects

General: May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Reproductive toxicity: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Lysis Buffer D	824.3	N/A	N/A	N/A	N/A
Guanidinium chloride	475	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Guanidinium chloride	-1.7	-	Low

Mobility in soil

Soil/water partition

coefficient (K_{oc}): Not available.

Other adverse effects: No known significant effect or critical hazards.

Section 13. Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TGD Classification	DOT Classification (US)	IMGD	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

AERG: Not applicable.

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments:

Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI: The following components are listed: Potassium dihydrogen phosphate
CEPA Toxic substances: None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II, & III Chemicals

Not listed

Montreal Protocol

Not listed

Stockholm Convention on Persistent Organic Pollutants

Not listed

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed

UNECE Aarhus Protocol on POPs and Heavy Metals

Inventory list

Canada: All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date

of revision: 08/30/2024

Date of previous

issue: 12/15/2021

Version: 03

Prepared by: Norgen Biotek Corp.

Key to abbreviations: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogP_{ow} = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 (Marpol = marine pollution)
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation method

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Slurry A1

Section 1. Identification

Product Identifier: Slurry A1
Product code: 90108
Product Type: Liquid

Supplier's details: Norgen Biotek Corporation
3430 Schmon Parkway
Thorold, ON
Canada L2V 4Y6
Tel: (905) 227-8848
Fax: (905) 227-1061
Toll Free: 1-866-667-4362
E-mail: techsupport@norgenbiotek.com

Emergency telephone number (with hours of operation): CHEMTREC
U.S. & Canada: 1-800-424-9300

Section 2. Hazard Identification

Classification of the Substance or mixture: ACUTE TOXICITY (oral) - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A

GHS label elements

Hazard Pictograms:



Signal Word: Warning
Hazard Statements: H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.

Precautionary statements:

Prevention: P280 - Wear protective gloves. Wear eye or face protection.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Response: P301 + P312, P330 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P332 + P313 - If skin irritation occurs: Get medical advice or attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - If eye irritation persists: Get medical advice or attention.

Storage: Not applicable.

Disposal: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Other means of identification: N/A

Ingredient name	% (w/w)	CAS number
Guanidinium chloride	60-80	50-01-1

Ranges id listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.
There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye Contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous

to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact: Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact: Causes serious eye irritation.
Inhalation: No known significant effects or critical hazards.
Skin contact: Causes skin irritation.
Ingestion: Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact: Adverse symptoms may include the following:
Pain or Irritation.
Watering.
Redness.
Inhalation: No known significant effects or critical hazards.
Skin contact: Adverse symptoms may include the following:
Irritation.
Redness.
Ingestion: No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments: No specific treatment.

Protection of

first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable

extinguishing media: None known.

Specific hazards

arising from the

chemical:

No specific fire or explosion hazard.

Hazardous thermal

decomposition

products:

Decomposition products may include the following materials:
Carbon dioxide, Carbon monoxide, Nitrogen oxides (NOx), halogenated compounds

Special protective

actions for

fire-fighters:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective

equipment for

fire-fighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency

personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency

responders:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental

precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage**Precautions for safe handling**

Protective measures: Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational

hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including incompatibilities:

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened

must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None

Appropriate engineering

controls: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental

exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin

protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory

protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance:

Physical State: Liquid.
Color: Clear with Black/Grey precipitate
Odor: Not available.
Odor threshold: Not available.
pH: Not available.
**Melting point/
 freezing point:** Not applicable.
**Boiling point, initial
 boiling point, and
 boiling range:** Not available.
Flash point: Not applicable.
Evaporation rate: Not available.
Flammability: Not available.
**Lower and upper
 explosion limit/
 flammability limit:** Not available.
Vapor pressure: Not available.
**Relative vapor
 density:** Not available.
Relative density: Not available.
Solubility: Miscible in water.
**Partition coefficient:
 n-octanol/water** Not applicable.
**Auto-ignition
 temperature:** Not available.

Decomposition

temperature: Not available.

Viscosity: Not available.

Flow time

(ISO 2431): Not available.

Particle characteristics

Median particle size: Not applicable.

Section 10. Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of

hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible

materials: Reactive or incompatible with the following materials; oxidizing materials, acids and alkalis.

Hazardous

decomposition

products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicology information

Information on toxicology effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Guanidinium chloride	LD50 Oral	Rat	475 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Guanidinium chloride	Eyes – Moderate Irritant	Rabbit	-	81400 µg	-
	Skin – Severe Irritant	Rabbit	-	24 hours 500 mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

**Information on the
likely routes of**

exposure: Routes of entry anticipated: Oral, dermal, inhalation

Potential acute health effects

- Eye contact:** Causes serious eye irritation.
- Inhalation:** No known significant effects or critical hazards.
- Skin contact:** Causes skin irritation.
- Ingestion:** Harmful if swallowed.

Symptoms related to the physical, chemical, and toxicological characteristics

- Eye contact:** Adverse symptoms may include the following:
 - Pain or Irritation.
 - Watering.
 - Redness.
- Inhalation:** No known significant effects or critical hazards.
- Skin contact:** Adverse symptoms may include the following:
 - Irritation.
 - Redness.
- Ingestion:** No known significant effects or critical hazards.

Delayed and immediate effects and chronic effects from short- and long-term exposure

Short term exposure

Potential immediate

effects: No known significant effects or critical hazards.

Potential delayed

effects: No known significant effects or critical hazards.

Long term exposure

Potential immediate

effects: No known significant effects or critical hazards.

Potential delayed

effects: No known significant effects or critical hazards.

Potential chronic health effects

General: No known significant effects or critical hazards.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Reproductive

toxicity: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Slurry A1	690.6	N/A	N/A	N/A	N/A
Guanidinium chloride	475	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Bioaccumulative Potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Guanidinium chloride	-1.7	-	Low

Mobility in soil

Soil/water partition

coefficient (K_{oc}): Not available.

Other adverse effects: No known significant effect or critical hazards.

Section 13. Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TGD Classification	DOT Classification (US)	IMGD	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

AERG: Not applicable.

Special precautions for user: **Transport within user’s premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments: Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI: None of the components are listed.

CEPA Toxic substances: None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II, & III Chemicals

Not listed

Montreal Protocol

Not listed

Stockholm Convention on Persistent Organic Pollutants

Not listed

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed

Inventory list

Canada: All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date

of revision: 09/03/2024

Date of previous

issue: 12/15/2021

Version: 03

Prepared by: Norgen Biotek Corp.

Key to abbreviations: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogP_{ow} = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 (Marpol = marine pollution)
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation method

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Binding Buffer B

Section 1. Identification

Product Identifier:	Binding Buffer B
Product code:	90198, 90219, 90022, 90082, 90201, 90081, Dx90198, Dx90201, 90197, Dx45409
Product Type:	Liquid
Supplier's details:	Norgen Biotek Corporation 3430 Schmon Parkway Thorold, ON Canada L2V 4Y6 Tel: (905) 227-8848 Fax: (905) 227-1061 Toll Free: 1-866-667-4362 E-mail: techsupport@norgenbiotek.com
Emergency telephone number (with hours of operation):	CHEMTREC U.S. & Canada: 1-800-424-9300

Section 2. Hazard Identification

Classification of the Substance or mixture:	ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
--	--

GHS label elements

Hazard Pictograms:



Signal Word:	Warning
Hazard Statements:	H302 - Harmful if swallowed. H315 - Causes skin irritation. H319 - Causes serious eye irritation.

Precautionary statements:

Prevention: P280 - Wear protective gloves. Wear eye or face protection.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Response: P301 + P312, P330 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P332 + P313 - If skin irritation occurs: Get medical advice or attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - If eye irritation persists: Get medical advice or attention.

Section 2. Hazard Identification

Storage: Not applicable.
Disposal: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Other means of identification: N/A

Ingredient name	% (w/w)	CAS number
Guanidinium chloride	60-80	50-01-1

Ranges id listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.
There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

- Eye Contact:** Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.
- Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact:** Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion:** Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact:** Causes serious eye irritation.
- Inhalation:** No known significant effects or critical hazards.
- Skin contact:** Causes skin irritation.
- Ingestion:** Harmful if swallowed.

Over-exposure signs/symptoms

- Eye contact:** Adverse symptoms may include the following:
Pain or irritation
Watering
Redness
- Inhalation:** No known significant effects or critical hazards.
- Skin contact:** Adverse symptoms may include the following:
Irritation
Redness
- Ingestion:** No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments: No specific treatment.

Protection of

first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable

extinguishing media: None known.

Specific hazards

arising from the

chemical:

No specific fire or explosion hazard.

Hazardous thermal

decomposition

products:

Decomposition products may include the following materials:
Carbon dioxide, Carbon monoxide, Nitrogen oxides (NO_x), Phosphorus oxides,
Halogenated compounds, metal oxide/oxides

Special protective

actions for

fire-fighters:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective

equipment for

fire-fighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency

personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency

responders:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental

precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill:

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill:

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including incompatibilities:

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls:

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental

exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance:

Physical State: Liquid
Color: Clear, colourless
Odor: Not available.
Odor threshold: Not available.
pH: 7
**Melting point/
freezing point:** Not applicable.
**Boiling point, initial
boiling point, and
boiling range:** Not available.
Flash point: Not applicable.
Evaporation rate: Not available.
Flammability: Not available.

Lower and upper explosion limit/flammability limit:	Not available.
Vapor pressure:	Not available.
Relative vapor density:	Not available.
Relative density:	Not available.
Solubility:	Miscible in water.
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not available.
Flow time (ISO 2431):	Not available.
<u>Particle characteristics</u>	
Median particle size:	Not applicable.

Section 10. Stability and reactivity

Reactivity:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability:	The product is stable.
Possibility of hazardous reactions:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid:	No specific data.
Incompatible materials:	Reactive or incompatible with the following materials; oxidizing materials, acids and alkalis.
Hazardous decomposition products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicology information

Information on toxicology effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Guanidinium chloride	LD50 Oral	Rat	475 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Guanidinium chloride	Eyes – Moderate Irritant	Rabbit	-	81400 µg	-
	Skin – Severe Irritant	Rabbit	-	24 hr 500 mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure:

Routes of entry anticipated: Oral, Dermal, Inhalation

Potential acute health effects

Eye contact: Causes serious eye irritation.

Inhalation: No known significant effects or critical hazards

Skin contact: Causes skin irritation.

Ingestion: Harmful if swallowed.

Symptoms related to the physical, chemical, and toxicological characteristics

Eye contact: Adverse symptoms may include the following:
Pain or Irritation
Watering
Redness

Inhalation: No known significant effects or critical hazards.

Skin contact: Adverse symptoms may include the following:
Irritation
Redness

Ingestion: No known significant effects or critical hazards.

Delayed and immediate effects and chronic effects from short- and long-term exposure

Short term exposure

Potential immediate effects: No known significant effects or critical hazards.

Potential delayed effects: No known significant effects or critical hazards.

Long term exposure

Potential immediate effects: No known significant effects or critical hazards.

Potential delayed effects: No known significant effects or critical hazards.

Potential chronic health effects

General: May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Reproductive toxicity: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Binding Buffer B	824.3	N/A	N/A	N/A	N/A
Guanidinium chloride	475	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Guanidinium chloride	-1.7	-	Low

Mobility in soil

Soil/water partition coefficient (K_{oc}):

Not available.

Other adverse effects:

No known significant effect or critical hazards.

Section 13. Disposal considerations

Disposal methods:

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TGD Classification	DOT Classification (US)	IMGD	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

AERG: Not applicable.

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments:

Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI: The following components are listed: Potassium dihydrogen phosphate
CEPA Toxic substances: None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II, & III Chemicals

Not listed

Montreal Protocol

Not listed

Stockholm Convention on Persistent Organic Pollutants

Not listed

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed

UNECE Aarhus Protocol on POPs and Heavy Metals

Inventory list

Canada: All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date

of revision: 08/30/2024

Date of previous

issue: 12/15/2021

Version: 03

Prepared by: Norgen Biotek Corp.

Key to abbreviations: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogP_{ow} = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 (Marpol = marine pollution)
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation method

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Binding Buffer C

Section 1. Identification

Product Identifier:	Binding Buffer C
Product code:	90084, 90085, 90226
Product Type:	Liquid
Supplier's details:	Norgen Biotek Corporation 3430 Schmon Parkway Thorold, ON Canada L2V 4Y6 Tel: (905) 227-8848 Fax: (905) 227-1061 Toll Free: 1-866-667-4362 E-mail: techsupport@norgenbiotek.com
Emergency telephone number (with hours of operation):	CHEMTREC U.S. & Canada: 1-800-424-9300

Section 2. Hazard Identification

Classification of the Substance or mixture:	FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
--	--

GHS label elements

Hazard Pictograms:



Signal Word: Warning

Hazard Statements: H226 - Flammable liquid and vapor.
H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H336 - May cause drowsiness or dizziness.

Precautionary statements:

Prevention: P280 - Wear protective gloves, protective clothing and eye or face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P271 - Use only outdoors or in a well-ventilated area.
P261 - Avoid breathing vapor.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Response: P304 + P340, P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
P301 + P312, P330 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P332 + P313 - If skin irritation occurs: Get medical advice or attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - If eye irritation persists: Get medical advice or attention.
Storage: P405 - Store locked up.
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

Disposal: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Other means of identification: N/A

Ingredient name	% (w/w)	CAS number
Guanidinium chloride	30-60	50-01-1
Isopropanol	15-40	67-63-0

Ranges id listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

- Eye Contact:** Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.
- Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact:** Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion:** Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact:** Causes serious eye irritation.
- Inhalation:** Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
- Skin contact:** Causes skin irritation.
- Ingestion:** Harmful if swallowed. Can cause central nervous system (CNS) depression.

Over-exposure signs/symptoms

Eye contact: Adverse symptoms may include the following:

Pain or Irritation

Watering

Redness

Inhalation: Adverse symptoms may include the following:

Nausea or Vomiting

Headache

Drowsiness/Fatigue

Dizziness/Vertigo

Unconsciousness

Skin contact: Adverse symptoms may include the following:

Irritation

Redness

Ingestion: No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments: No specific treatment.

Protection of

first-aiders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media: Use dry chemical, CO₂, water spray (fog) or foam

Unsuitable

extinguishing media: Do not use water jet.

Specific hazards

arising from the

chemical: Flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal

decomposition

products: Decomposition products may include the following materials: Carbon dioxide, Carbon monoxide, Nitrogen oxides (NO_x), Halogenated compounds

Special protective actions for

fire-fighters:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for

fire-fighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill:

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill:

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or

diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including incompatibilities:

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Isopropanol	<p>CA Alberta Provincial (Canada, 6/2018). 15 min OEL: 984 mg/m³ 15 minutes. 8 hrs OEL: 200 ppm 8 hours. 15 min OEL: 400 ppm 15 minutes. 8 hrs OEL: 492 mg/m³ 8 hours.</p> <p>CA British Columbia Provincial (Canada,5/2019). TWA: 200 ppm 8 hours. STEL: 400 ppm 15 minutes.</p> <p>CA Ontario Provincial (Canada, 1/2018). TWA: 200 ppm 8 hours. STEL: 400 ppm 15 minutes.</p> <p>CA Quebec Provincial (Canada, 1/2014). TWAEV: 400 ppm 8 hours. TWAEV: 983 mg/m³ 8 hours. STEV: 500 ppm 15 minutes. STEV: 1230 mg/m³ 15 minutes.</p> <p>CA Saskatchewan Provincial (Canada,7/2013). STEL: 400 ppm 15 minutes. TWA: 200 ppm 8 hours.</p>

Appropriate engineering

controls: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental

exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance:

Physical State: Liquid
Color: Clear, colourless
Odor: Alcohol
Odor threshold: Not available.
pH: ~6
**Melting point/
 freezing point:** Not applicable.

Boiling point, initial boiling point, and boiling range:	Not available.
Flash point:	Closed cup: 24°C (75.2°F)
Evaporation rate:	Not available.
Flammability:	Not available.
Lower and upper explosion limit/flammability limit:	Not available.
Vapor pressure:	Not available.
Relative vapor density:	Not available.
Relative density:	Not available.
Solubility:	Miscible in water.
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not available.
Flow time (ISO 2431):	Not available.
<u>Particle characteristics</u>	
Median particle size:	Not applicable.

Section 10. Stability and reactivity

Reactivity:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability:	The product is stable.
Possibility of hazardous reactions:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid:	No specific data.
Incompatible materials:	Reactive or incompatible with the following materials; oxidizing materials.
Hazardous decomposition products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicology information

Information on toxicology effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Guanidinium chloride	LD50 Oral	Rat	475 mg/kg	-
Isopropanol	LD50 Dermal	Rabbit	12800 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Guanidinium chloride	Eyes – Moderate Irritant	Rabbit	-	81400 µg	-
	Skin – Severe Irritant	Rabbit	-	24 hours	-
Isopropanol	Eyes – Moderate Irritant	Rabbit	-	500 mg	-
	Eyes – Moderate Irritant	Rabbit	-	24 hours	-
	Eyes – Moderate Irritant	Rabbit	-	100 mg	-
	Eyes – Moderate Irritant	Rabbit	-	10mg	-
	Eyes – Severe Irritant	Rabbit	-	100mg	-
	Skin – Mild Irritant	Rabbit	-	500mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

Product/ingredient name	IARC	NTP	ACGIH
Isopropanol	3	-	A4

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of Exposure	Target Organs
Isopropanol	Category 3	-	Narcotic effects

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure:

Routes of entry anticipated: Oral, Dermal, Inhalation

Potential acute health effects

Eye contact: Causes serious eye irritation.

Inhalation: Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact: Causes skin irritation.

Ingestion: Harmful if swallowed. Can cause central nervous system (CNS) depression.

Symptoms related to the physical, chemical, and toxicological characteristics

Eye contact: Adverse symptoms may include the following:
Pain or Irritation
Watering
Redness

Inhalation: Adverse symptoms may include the following:
Nausea or Vomiting
Headache
Drowsiness/Fatigue
Dizziness/Vertigo
Unconsciousness

Skin contact: Adverse symptoms may include the following:
Irritation
Redness

Ingestion: No known significant effects or critical hazards.

Delayed and immediate effects and chronic effects from short- and long-term exposure

Short term exposure

Potential immediate

effects: No known significant effects or critical hazards.

Potential delayed

effects: No known significant effects or critical hazards.

Long term exposure

Potential immediate

effects: No known significant effects or critical hazards.

Potential delayed

effects: No known significant effects or critical hazards.

Potential chronic health effects

General: No known significant effects or critical hazards.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Reproductive

toxicity: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Binding Buffer C	994.1	N/A	N/A	N/A	N/A
Guanidinium chloride	475	N/A	N/A	N/A	N/A
Isopropanol	5000	12800	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Isopropanol	Acute EC50 7550 mg/L Fresh Water	Daphnia – Daphnia magna (Neonate)	48 Hours
	Acute LC50 140000 µg/L Marine Water	Crustaceans – Crangon crangon	48 Hours
	Acute LC50 4200 mg/L Fresh Water	Fish – Rasbora heteromorpha	48 Hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Guanidinium chloride	-1.7	-	Low
Isopropanol	0.05	-	Low

Mobility in soil

Soil/water partition

coefficient (K_{oc}): Not available.





Other adverse effects: No known significant effect or critical hazards.

Section 13. Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material

and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	DOT Classification (US)	IMDG	IATA
UN number	UN1986	UN1986	UN1986	UN1986
UN proper shipping name	ALCOHOLS, N.O.S. (Isopropyl Alcohol)	ALCOHOLS, N.O.S. (Isopropyl Alcohol)	ALCOHOLS, N.O.S. (Isopropyl Alcohol)	ALCOHOLS, N.O.S. (Isopropyl Alcohol)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	No.	No.	No.	No.

AERG: 131

Additional Information

TDG Classification

Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments:

Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI:

The following components are listed: Isopropanol

CEPA Toxic substances:

None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II, & III Chemicals

Not listed

Montreal Protocol

Not listed

Stockholm Convention on Persistent Organic Pollutants

Not listed

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed

Inventory list

Canada: All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date

of revision: 09/06/2024

Date of previous

issue: 12/15/2021

Version: 03

Prepared by: Norgen Biotek Corp.

Key to abbreviations: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogP_{ow} = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 (Marpol = marine pollution)
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
ACUTE TOXICITY (oral) - Category 4	Calculation Method
SKIN CORROSION/IRRITATION - Category 2	Calculation Method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A	Calculation Method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3	Calculation Method

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Wash Solution A

Section 1. Identification

Product Identifier: Wash Solution A
Product code: 17204, 90026, 90027, 90028, 43506, 90240, 90242, Dx17204, Dx90240, Dx90242, Dx90026, Dx90028, Dx29604, Dx45410, Dx26504, Dx54303
Product Type: Liquid

Supplier's details: Norgen Biotek Corporation
3430 Schmon Parkway
Thorold, ON
Canada L2V 4Y6
Tel: (905) 227-8848
Fax: (905) 227-1061
Toll Free: 1-866-667-4362
E-mail: techsupport@norgenbiotek.com

Emergency telephone number (with hours of operation): CHEMTREC
U.S. & Canada: 1-800-424-9300

Section 2. Hazard Identification

Classification of the Substance or mixture: Not a Hazardous Substance or Mixture

GHS label elements
Hazard Pictograms: No hazard pictogram required.
Signal Word: No signal word required.
Hazard Statements: No hazard statement(s) required

Precautionary statements: No precautionary statement(s) required)
Prevention:
Response:

Section 2. Hazard Identification

Storage: Not applicable.
Disposal: Not applicable.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Other means of identification: Not Applicable

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye Contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact: Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact:	In case of contact with eyes, rinse out with water. Remove contact lenses.
Inhalation:	If inhaled, move patient to fresh air.
Skin contact:	In case of skin contact, rinse skin with water. Remove contaminated clothing.
Ingestion:	In case of ingestion, do not induce vomiting. Drink water. Consult a doctor if feeling unwell.

Over-exposure signs/symptoms

Eye contact:	Possible irritation
Inhalation:	Possible cough, possible irritation
Skin contact:	Possible irritation
Ingestion:	Possible stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician:	Not applicable
Specific treatments:	No data available
Protection of first-aiders:	No data available

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable

extinguishing media: For this substance/mixture no limitations of extinguishing agents are given.

Specific hazards

arising from the

chemical:

Not combustible. Ambient fire may liberate hazardous vapours

Hazardous thermal

decomposition

products:

None

Special protective

actions for

fire-fighters:

In the event of fire, wear self-contained breathing apparatus.

Special protective

equipment for

fire-fighters:

In the event of fire, wear self-contained breathing apparatus.

Section 6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency

personnel:

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

For emergency

responders:

Advice for emergency responders: Do not breathe vapors, aerosols. Evacuate the danger area, observe emergency procedures. For personal protection see section 8.

Environmental

precautions:

No special precautionary measures necessary

Methods and materials for containment and cleaning up

Small spill:

Dilute with water. Wipe up with absorbent pad.

Large spill:

Observe possible material restrictions (see sections 7 and 10). Take up with liquid absorbent material. Dispose of properly. Clean up affected area.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: For precautions see section 2.

Advice on general occupational

hygiene:

Wear appropriate PPE (if any) when handling.

Conditions for safe storage, including

incompatibilities:

No special storage conditions required. Keep tightly closed.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Contains no substances with occupational exposure limit values

Appropriate engineering

controls:

Not required.

Environmental

exposure controls:

Not required.

Individual protection measures

Hygiene measures: No data available

Eye/face protection:

Skin protection

Hand protection:	Not required
Body protection:	Not required
Other skin protection:	Not required
Respiratory protection:	Not required

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance:

Physical State:	Liquid
Color:	Clear, colourless
Odor:	Not available.
Odor threshold:	Not available.
pH:	7.5
Melting point/ freezing point:	Not applicable.
Boiling point, initial boiling point, and boiling range:	Not available.
Flash point:	Not applicable.
Evaporation rate:	Not available.
Flammability:	Not available.
Lower and upper explosion limit/ flammability limit:	Not available.
Vapor pressure:	Not available.
Relative vapor density:	Not available.
Relative density:	Not available.
Solubility:	Miscible in water.
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.

Viscosity: Not available.

Flow time

(ISO 2431): Not available.

Particle characteristics

Median particle size: Not applicable.

Section 10. Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of

hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible

materials: Reactive or incompatible with the following materials; oxidizing materials, acids and alkalis.

Hazardous

decomposition

products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicology information

Information on toxicology effects

Acute toxicity

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Irritation/Corrosion

To the best of our knowledge, this mixture is not considered an irritant or corrosive.

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of

exposure: Most likely routes of exposure are: Inhalation, Ingestion, skin contact. No hazards known for listed routes of exposure

Potential acute health effects

Eye contact: No data available

Inhalation: No data available

Skin contact: No data available

Ingestion: No data available

Symptoms related to the physical, chemical, and toxicological characteristics

Eye contact: No data available

Inhalation: No data available

Skin contact: No data available

Ingestion: No data available

Delayed and immediate effects and chronic effects from short- and long-term exposure

Short term exposure

Potential immediate

effects: No data available

Potential delayed

effects: No data available

Long term exposure

Potential immediate

effects: No data available

Potential delayed

effects: No data available

Potential chronic health effects

General: No data available

Carcinogenicity: No data available

Mutagenicity: No data available

Reproductive

toxicity: No data available

Numerical measures of toxicity

Acute toxicity estimates

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Mobility in soil

Soil/water partition

coefficient (K_{oc}): Not available.

Other adverse effects: No known significant effect or critical hazards.

Section 13. Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TGD Classification	DOT Classification (US)	IMGD	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

AERG: Not applicable.

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments:

Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI: The following components are listed: No listed components

CEPA Toxic

substances: None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II, & III Chemicals

Not listed

Montreal Protocol

Not listed

Stockholm Convention on Persistent Organic Pollutants

Not listed

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed

UNECE Aarhus Protocol on POPs and Heavy Metals

Not Listed

Inventory list

Canada: All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date

of revision: 08/30/2024

Date of previous

issue: 12/15/2021

Version: 03

Prepared by: Norgen Biotek Corp.

Key to abbreviations: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogP_{OW} = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 (Marpol = marine pollution)
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
Non-Hazardous	This substance/mixture does not contain hazardous components

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Elution Buffer B

Section 1. Identification

Product Identifier: Elution Buffer B
Product code: 90020, 90021, 90022, 90197, Dx90020, Dx90022, Dx18210, Dx26505, Dx26102
Product Type: Liquid

Supplier's details: Norgen Biotek Corporation
3430 Schmon Parkway
Thorold, ON
Canada L2V 4Y6
Tel: (905) 227-8848
Fax: (905) 227-1061
Toll Free: 1-866-667-4362
E-mail: techsupport@norgenbiotek.com

Emergency telephone number (with hours of operation): CHEMTREC
U.S. & Canada: 1-800-424-9300

Section 2. Hazard Identification

Classification of the Substance or mixture: Not a Hazardous Substance or Mixture

GHS label elements

Hazard Pictograms: No hazard pictogram required.
Signal Word: No signal word required.
Hazard Statements: No hazard statement(s) required

Precautionary statements: No precautionary statement(s) required)

Prevention:
Response:

Section 2. Hazard Identification

Storage: Not applicable.
Disposal: Not applicable.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Other means of identification: Not Applicable

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye Contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact: Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact:	In case of contact with eyes, rinse out with water. Remove contact lenses.
Inhalation:	If inhaled, move patient to fresh air.
Skin contact:	In case of skin contact, rinse skin with water. Remove contaminated clothing.
Ingestion:	In case of ingestion, do not induce vomiting. Drink water. Consult a doctor if feeling unwell.

Over-exposure signs/symptoms

Eye contact:	Possible irritation
Inhalation:	Possible cough, possible irritation
Skin contact:	Possible irritation
Ingestion:	Possible stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician:	Not applicable
Specific treatments:	No data available
Protection of first-aiders:	No data available

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable

extinguishing media: For this substance/mixture no limitations of extinguishing agents are given.

Specific hazards

arising from the

chemical:

Not combustible. Ambient fire may liberate hazardous vapours

Hazardous thermal

decomposition

products:

None

Special protective

actions for

fire-fighters:

In the event of fire, wear self-contained breathing apparatus.

Special protective

equipment for

fire-fighters:

In the event of fire, wear self-contained breathing apparatus.

Section 6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency

personnel: Advice for non-emergency personnel: Do not breathe vapors, aerosols. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

For emergency responders:

Advice for emergency responders: Do not breathe vapors, aerosols. Evacuate the danger area, observe emergency procedures. For personal protection see section 8.

Environmental precautions:

No special precautionary measures necessary

Methods and materials for containment and cleaning up

Small spill: Dilute with water. Wipe up with absorbent pad.

Large spill: Observe possible material restrictions (see sections 7 and 10). Take up with liquid absorbent material. Dispose of properly. Clean up affected area.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: For precautions see section 2.

Advice on general occupational

hygiene: Wear appropriate PPE (if any) when handling.

Conditions for safe storage, including

incompatibilities: No special storage conditions required. Keep tightly closed.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Contains no substances with occupational exposure limit values

Appropriate engineering

controls: Not required.

Environmental

exposure controls: Not required.

Individual protection measures

Hygiene measures: No data available

Eye/face protection:

Skin protection

Hand protection:	Not required
Body protection:	Not required
Other skin protection:	Not required
Respiratory protection:	Not required

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance:

Physical State:	Liquid
Color:	Clear, colourless
Odor:	Not available.
Odor threshold:	Not available.
pH:	11
Melting point/ freezing point:	Not applicable.
Boiling point, initial boiling point, and boiling range:	Not available.
Flash point:	Not applicable.
Evaporation rate:	Not available.
Flammability:	Not available.
Lower and upper explosion limit/ flammability limit:	Not available.
Vapor pressure:	Not available.
Relative vapor density:	Not available.
Relative density:	Not available.
Solubility:	Miscible in water.
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.

Viscosity: Not available.

Flow time

(ISO 2431): Not available.

Particle characteristics

Median particle size: Not applicable.

Section 10. Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of

hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible

materials: Reactive or incompatible with the following materials; oxidizing materials, acids and alkalis.

Hazardous

decomposition

products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicology information

Information on toxicology effects

Acute toxicity

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Irritation/Corrosion

To the best of our knowledge, this mixture is not considered an irritant or corrosive.

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

**Information on the
likely routes of**

exposure: Most likely routes of exposure are: Inhalation, Ingestion, skin contact. No hazards known for listed routes of exposure

Potential acute health effects

Eye contact: No data available

Inhalation: No data available

Skin contact: No data available

Ingestion: No data available

Symptoms related to the physical, chemical, and toxicological characteristics

Eye contact: No data available

Inhalation: No data available

Skin contact: No data available

Ingestion: No data available

Delayed and immediate effects and chronic effects from short- and long-term exposure

Short term exposure

Potential immediate

effects: No data available

Potential delayed

effects: No data available

Long term exposure

Potential immediate

effects: No data available

Potential delayed

effects: No data available

Potential chronic health effects

General: No data available

Carcinogenicity: No data available

Mutagenicity: No data available

Reproductive

toxicity: No data available

Numerical measures of toxicity

Acute toxicity estimates

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Mobility in soil

Soil/water partition

coefficient (K_{oc}): Not available.

Other adverse effects: No known significant effect or critical hazards.

Section 13. Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TGD Classification	DOT Classification (US)	IMGD	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

AERG: Not applicable.

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments:

Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI: The following components are listed: No listed components

CEPA Toxic

substances: None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II, & III Chemicals

Not listed

Montreal Protocol

Not listed

Stockholm Convention on Persistent Organic Pollutants

Not listed

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed

UNECE Aarhus Protocol on POPs and Heavy Metals

Not Listed

Inventory list

Canada: All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date

of revision: 08/30/2024

Date of previous

issue: 12/15/2021

Version: 03

Prepared by: Norgen Biotek Corp.

Key to abbreviations: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogP_{ow} = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships,
 1973 as modified by the Protocol of 1978 (Marpol = marine pollution)
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
Non-Hazardous	This substance/mixture does not contain hazardous components

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.